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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,963	07/15/2003	Preben Lexow	Q-76325	5915

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EXAMINER	
WHISENANT, ETHAN C	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/618,963	LEXOW, PREBEN	
	Examiner	Art Unit	
	Ethan Whisenant, Ph.D.	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-34* is/are rejected.

7)☒ Claim(s) *35-38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/886,223.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

NON-FINAL ACTION

1. The applicant's response (filed 25 APR 06) to the Office Action has been entered. Following the entry of the claim amendment(s), **Claim(s) 26-38** is/are pending. Rejections and/or objections not reiterated from the previous office action are hereby withdrawn. The following rejections and/or objections are either newly applied or reiterated. They constitute the complete set presently being applied to the instant application.

35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that may form the basis for rejections set forth in this Office action:

> A person shall be entitled to a patent unless --
>
> **(a)** the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> **(b)** the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> **(e)** the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
> or
> **(e)** the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim Rejections under 35 USC § 102

4. **Claim(s) 26-30** is/are rejected under 35 U.S.C. 102(b) as being anticipated by Keith et al. [US 4,883,761 (1989)].

Claim 26 is drawn to a method of sequencing all or part of a target nucleic acid molecule comprising three steps. To begin [Step(A)], the sequence of a portion of said target nucleic acid molecule is determined by identifying magnifying tags associated with said portion of the target nucleic acid molecule, wherein said magnifying tags represent a detectable signal or sequence that corresponds to one or more bases of said portion. Next [Step (B)], the position of said portion within said target nucleic acid molecule is determined. Finally [Step (C)], the information obtained in steps (A) and (B) are combined to obtain all or part of a target nucleic acid molecule.

Keith et al. teach a method of sequencing all or part of a target nucleic acid sequence comprising all of the limitations recited in Claim 26. The phrase magnifying tags as defined in Claim 26 is very broad to include "a detectable signal or sequence that corresponds to one or more bases of said portion." The magnifying tags used by Keith et al. are the radioisotopes (i.e. "a detectable signal or sequence that corresponds to one or more bases of said portion") used during the sequencing of the various subclones via the Sanger method [Sanger et al. PNAS 74(12) :5463-5467(1977)]. See, at least, for example Column 8, beginning at about line 40. Note also , Figure 5a-5d and the description of Figure 5 in Column 2.

Claim 27 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein said position is determined by reference to a positional marker.

Keith et al. teach this limitation wherein they teach that the sequencing of the

subclones was performed using the universal 17-base primer (i.e. a positional marker).

Claim 28 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein said position is determined by reference to a restriction map of said target nucleic acid molecule.

Keith et al. teach this limitation. See, at least, for example Figure 5a-5d and the description of Figure 5 in Column 2.

Claim 29 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein the portion which is sequenced has 4 or more nucleotide bases and/or the position of said portion within said target nucleic acid molecule is determined with an accuracy of less than 1kb.

Keith et al. teach both of these limitations. See, at least, for example Table 2 wherein the entire sequence of the Pertusis toxin gene is disclosed (i.e. the portion which is sequenced has 4 or more nucleotide bases and the position of said portion within said target nucleic acid molecule is determined with an accuracy of less than 1 kb).

Claim 30 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein said portion is sequenced by identifying magnifying tags associated with the target nucleic acid molecule, wherein said magnifying tags correspond to one or more bases of an adapter binding region wherein said adapter binding region binds an adapter molecule which comprises one or more of said magnifying tags or a means for attaching one or more of said said magnifying tags.

Keith et al. teach this limitation wherein they teach that the sequencing of the subclones was performed using the universal 17-base primer. The individual labeled nucleotides generated during the sequencing reactions using the Sanger method are

the "magnifying tags" while the adapter molecule in Keith et al. is the universal 17-base primer which serves "a means for attaching one or more of said said magnifying tags."

5. Claim(s) 26-27, and 29–30 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Shumaker et al. [Human Mutation 7 : 346-354 (1996)].

Shumaker et al. teach a method of sequencing all or part of a target nucleic acid sequence comprising all of the limitations recited in **Claim 26**. Note especially the APEX method described at least for example on p.348 and in Figure 4 The phrase magnifying tags as defined in Claim 26 is very broad and includes "a detectable signal or sequence that corresponds to one or more bases of said portion." The magnifying tags used by Shumaker et al. are the radiolabeled deoxynucleotides (i.e. "a detectable signal or sequence that corresponds to one or more bases of said portion") used during their minisequencing /primer extension reactions.

Claim 27 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein said position is determined by reference to a positional marker.

Shumaker et al. teach this limitation. The positional marker used to position the their minisequencing /primer extension reactions shown in Figure 4 is the 3' end of the immobilized primers.

Claim 29 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein the portion which is sequenced has 4 or more nucleotide bases and/or the position of said portion within said target nucleic acid molecule is determined with an accuracy of less than 1kb.

Shumaker et al. teach both of these limitations. See, at least, for example Figure 4.

Claim 30 is drawn to an embodiment of the method of sequencing all or

part of a target nucleic acid molecule as claimed in Claim 26 wherein said portion is sequenced by identifying magnifying tags associated with the target nucleic acid molecule, wherein said magnifying tags correspond to one or more bases of an adapter binding region or to one or more bases in proximity to an adapter binding region wherein said adapter binding region binds an adapter molecule which comprises one or more of said magnifying tags or a means for attaching one or more of said magnifying tags.

Shumaker et al. teach both of these limitations.Note that the immobilized primer is the adapter molecule which comprises a means for attaching one or more of said said magnifying tags. As regards the phrase "wherein said magnifying tags correspond to one or more bases of an adapter binding region or to one or more bases in proximity to an adapter binding region ," it should be noted that the type of correspondence intended is unclear, therefore, it is asserted that the nucleotide sequence read from the 3'-end of the immobilized primer as shown in Figure 4 correspond to one or more bases of an adapter binding region or to one or more bases in proximity to an adapter binding region.

6. Claim(s) 26, 29, 31-34 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Strezoska et al. [PNAS 88(22) : 10089- 10093 (1993)].

Strezoska et al. teach a method of sequencing all or part of a target nucleic acid sequence comprising all of the limitations recited in **Claim 26**. In Strezoska et al. the magnifying tags are the individual labelled oligonucleotide probes hybridized to the immobilized target nucleic acid sequence. See, at least, for example, Panel A of Figure 1.

Claim 29 is drawn to an embodiment of the method of sequencing all or

Strezoska et al. teach both of these limitations. See, at least, for example, Panel A of Figure 1.

Claim 31 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein the sequence of the target nucleic acid molecule is determined by assessing the complementarity of a portion of said target nucleic acid molecule by a process comprising the steps of: (i) treating said target nucleic acid molecule so that at least a region of said target nucleic acid molecule is converted into a form suitable for binding a complementary probe, wherein said complementary probe is bound to a solid support or said complementary probe carries a means for attaching to a solid support; (ii) binding said complementary probe to at least a portion of said region suitable for binding a complementary probe;~~(iii) **optionally** repeating steps (i) and (ii), with the proviso that said complementary probe binds to an adjacent or overlapping region of said target nucleic acid molecule relative to the region to which the complementary probe of the previous cycle bound~~; and(iv) determining the sequence of said target nucleic acid molecule by identifying the complementary probe(s) to which said target nucleic acid molecule bound.

Strezoska et al. teach all of the limitations recited in Claim 31. See, at least, for example, Panel A of Figure 1. As regards the limitation which reads "wherein said complementary probe is bound to a solid support or said complementary probe carries a means for attaching to a solid support," note that the complementary probe is bound to a solid support following the hybridization step taught by Strezoska et al. See, at least, for example, Panel A of Figure 1. Note also that the complementary probe carries a means for attaching to a solid support (i.e. its nucleotide sequence). Finally note that the portion of the claim struckthrough is optional and need not be taught by the reference.

Claim 32 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 31 wherein in step (i) said

form is a single-stranded nucleic acid molecule.

Strezoska et al. teach this limitation. See, at least for example, that portion of the "MATERIALS AND METHODS" section entitled "Spotting and Hybridization Conditions" on p.10090.

Claim 33 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 31 wherein in step (ii) said portion is 4 to 12 nucleotides in length.

Strezoska et al. teach this limitation. See, at least for example, the legend for Figure 1.

Claim 34 is drawn to an embodiment of the method of sequencing all or part of a target nucleic acid molecule as claimed in Claim 26 wherein a portion of said sequence is determined by identifying magnifying tags associated with the target nucleic acid molecule, wherein said magnifying tags correspond to one or more bases of an adapter binding region or to one or more bases in proximity to an adapter binding region, wherein said adapter binding region binds an adapter molecule which comprises: (i) one or more of said magnifying tags, or (ii) a means for attaching one or more of said magnifying tags; and an adjacent or overlapping portion of said sequence is determined by a process comprising the steps of: (i) treating said target nucleic acid molecule so that a region of said target nucleic acid molecule is converted into a form suïtable for binding a complementary probe, wherein said complementary probe is bound to a solid support or said complementary probe carries a means for attaching to a solid support; (ii) binding said complementary probe to at least a portion of said region suitable for binding a complementary probe~~;(iii) optionally repeating steps (i) and (ii), with the proviso that saïd complementary probe binds to an adjacent or overlapping region of said target nucleic acid molecule relative to the region to which the complementary probe of the previous cycle bound~~; and (iv) determining the sequence of said target nucleic acid molecule by identifying the complementary probe(s) to which said target nucleic acid molecule bound.

Strezoska et al. teach this embodiment in view of the abiguity of the phrase "adapter molecule." From the claim language used it appears that the adapter molecule can be/is equivalent to a magnifying tag. As argued previously, against Claim 26 above Strezoska et al. teach the hybridization of magnifying tags to single stranded target nucleic acid molecules. See, Figure 1 and the legend to Figure 1, note especially panel A of Figure 1. As regards the limitation which reads "wherein said complementary probe is bound to a solid support or said complementary probe carries a means for attaching to a solid support," note that the complementary probe is bound to a solid support following the hybridization step taught by Strezoska et al. See, for example, Panel A of Figure 1. Note also that the complementary probe carries a means for attaching to a solid support (i.e. its nucleotide sequence). Finally note that the portion of the claim struckthrough is optional and need not be taught by the reference.

CLAIM OBJECTIONS

7. **Claim(s) 35-38** are objected to because they are dependent upon a rejected independent base claim.

RESPONSE TO APPLICANT'S AMENDMENT/ ARGUMENTS

8. Applicant's arguments with respect to the claimed invention have been fully and carefully considered but are moot in view of the new grounds of rejection. It must be noted that the claims as drawn are very broad as evidenced by the prior art rejections.

CONCLUSION

9. **Claim(s) 26-38** is/are rejected and/or objected to for the reason(s) set forth above.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ethan Whisenant, Ph.D. whose telephone number is (571) 272-0754. The examiner can normally be reached Monday-Friday from 8:30AM - 5:30PM EST or any time via voice mail. If repeated attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached at (571) 272-0735.

The Central Fax number for the USPTO is (571) 273-8300. Please note that the faxing of papers must conform with the Notice to Comply published in the Official Gazette, 1096 OG 30 (November 15, 1989).

ETHAN WHISENANT
PRIMARY EXAMINER
Art Unit 1634